



Supplier Clean Energy

2021 Program Update

Apple is committed to addressing climate change and increasing the use of renewable energy around the world. We started by transitioning to renewable energy at our own facilities and after a decade of work, we reached 100 percent renewable energy in 2018. Along the way, we launched the Supplier Clean Energy Program in 2015 to advance clean energy through our manufacturing supply chain. And in 2020, we reached our initial goal—to bring online 4 gigawatts of clean energy into our supply chain.

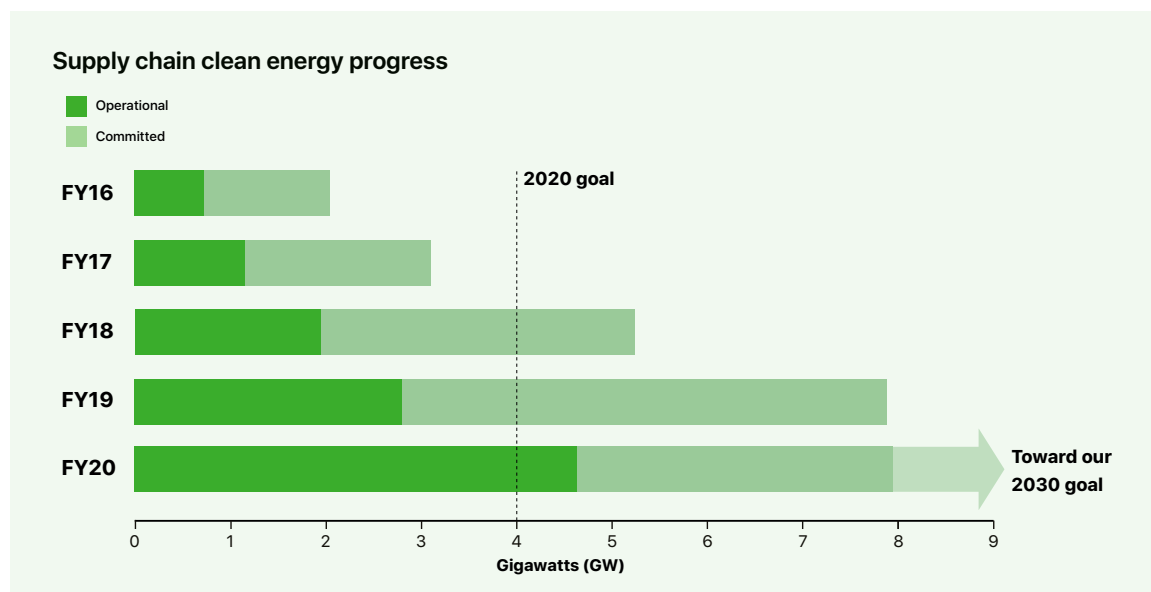
Building on this progress, we unveiled our most ambitious plan to date: to achieve carbon neutrality across our supply chain and in our product lifecycle by 2030. This goal places us 20 years ahead of the recommendations put forward by the Intergovernmental Panel on Climate Change calling for carbon neutrality as a planet by 2050. To reach this target, we are working with suppliers to transition our entire manufacturing supply chain—including material extraction, component manufacturing, and final product assembly—to 100 percent renewable electricity.

Supplier Clean Energy Program

100%

supply chain
clean energy
by 2030

The Supplier Clean Energy Program is integral to Apple's goal of reaching carbon neutrality by 2030. Nearly half of our comprehensive carbon footprint comes from the electricity used to manufacture our products. We're focused on increasing energy efficiency at supplier facilities and transitioning suppliers to clean, renewable electricity. These efforts are helping to reduce product-related carbon emissions, create a more resilient supply chain, and contribute to healthier communities—while also paving the way for others to follow.



To ensure that our program achieves the greatest positive impact, we require that all supplier clean energy projects meet stringent social and environmental standards. The data above reflects only those projects that meet our strict standards and include only clean energy generated or sourced since Apple's engagement. Operational data is based on our last annual supplier energy survey for fiscal year 2020.

We're proud of the progress our suppliers have made. To date, 109 manufacturing partners in 24 countries have committed to 100 percent renewable energy for Apple production. Additionally, Apple itself has invested directly in renewable energy projects to cover a portion of upstream emissions. The Supplier Clean Energy Program now has almost 8 gigawatts of clean energy commitments. Once completed, these commitments will avoid over 15 million metric tons of CO₂e annually—the equivalent of taking over 3.4 million cars off the road each year.¹

Transitioning the supply chain to renewable energy

Apple envisions a world where renewable energy is cost-effective, reliable, and widely available to all. More renewable energy means healthier air, stronger local economies, and lower carbon emissions. And our carbon-neutral commitment will require an unprecedented supply chain transformation toward renewable energy, supporting the addition of gigawatts of new generation across the world. Here are the pillars of our plan to achieve that transformation:

Galvanizing internal champions. Apple employees are passionate about the environment and excited about our 2030 commitment. We're empowering all supplier-facing employees with the tools they need to support our mission and speed a supplier's transition to renewable energy. It starts with data and transparency. We track progress of our suppliers, some of whom are just beginning to learn about renewables, and others that are well on their way to 100 percent renewable. We've also created internal trainings and crafted a simple engagement process, backed by resources for both Apple employees and our suppliers. By connecting our suppliers with resources and helping Apple employees assess supplier performance, our teams are scaling impact across our supply chain.

Supplier energy efficiency and clean energy achievements

2015

Launch of the Supplier Clean Energy Program and Supplier Energy Efficiency Program

2017

Launch of the Supplier Clean Energy Portal

Initial investment in the development of nearly **500 megawatts** of solar and wind projects in China and Japan to address upstream emissions in our supply chain

Supplier Code of Conduct requires suppliers to maintain an inventory of air emissions including greenhouse gases

2018

iPhone final assembly sites in China set **three-year target** to reduce energy use by 20 percent

Launch of the **China Clean Energy Fund**, which will enable Apple and our suppliers to invest in more than 1 gigawatt of renewable energy in China

2019

Key supplier commitments reached in major supply chain countries.

First **in-person training** hosted by Apple for over 30 suppliers in China

Launch of partnership with **Asia Green Fund** to drive energy efficiency

2020

More than 100 suppliers committed to **100 percent renewable electricity** for Apple production

AirPods, iPad, and Apple Watch final assembly sites in China kick off **multiyear efficiency reduction** goals

More than **4 gigawatts of renewable energy** brought online, and nearly 8 gigawatts of renewable energy commitments reached

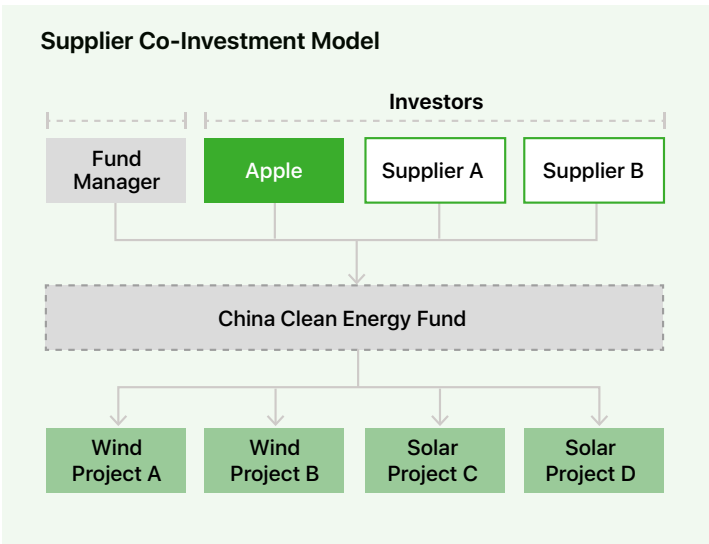
¹ Greenhouse gas equivalency is calculated using the U.S. EPA Greenhouse Gas Equivalencies Calculator: www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

Supporting supplier capacity. We share the experience gained through our own transition to 100 percent renewable energy with our suppliers. We introduce suppliers to resources and training materials with country-specific information to guide them in their transition to renewables. These tools are available through our Supplier Clean Energy Portal. We also educate suppliers through advanced and customized training with leading experts. And we support the creation and growth of renewable energy industry associations that our suppliers can join to learn about local opportunities.

Longstanding energy structures can make it difficult to bring new renewable energy online in some regions, prompting some of our suppliers to maximize existing renewable energy solutions—like onsite solar installations. Others have pioneered new purchasing methods, creating renewable energy businesses or even participating in some of the world’s largest and most innovative renewable energy deals.

Advocating for policy change. Suppliers often face regulatory barriers to cost-effective renewable energy options. Clean energy technology offers tremendous benefits to our suppliers, to electricity grids, and to countries. We believe that when policymakers fully value these benefits, clean energy becomes more cost competitive than fossil fuel energy. So we actively support policies that offer greater access to cost-effective renewable energy, and we work closely with suppliers and other climate-leading companies to engage local, regional, and national governments. This encourages the development of country-specific policies that support scalable renewable energy solutions, with impact far beyond Apple’s supply chain.

Innovating new renewable energy solutions. We constantly develop new tools for our suppliers to help execute on their renewable energy goals. In many markets where we operate, companies have limited options to access clean energy. To break down that barrier, we created the China Clean Energy Fund, which enables Apple and our suppliers to invest in clean energy projects totaling more than one gigawatt of renewable energy in China [see the China Clean Energy Fund figure below]. We also connect suppliers with opportunities to buy renewable energy directly from project developers and utilities as those models emerge around the globe.



Supplier Commitments

As we continue transitioning our supply chain to clean energy, these 109 suppliers—including 40 new commitments in the past year—have committed globally to producing Apple products with 100 percent clean energy:

- II-VI Incorporated
- 3M
- Advanced International Multitech
- AKM Meadville Electronics
- Alpha and Omega Semiconductor Limited*
- Amphenol
- Arkema
- ASE Technology Holding
- Asia Vital Components Company Limited*
- ATL
- AT&S
- Auras Technology Co., Ltd.*
- Avary Holding
- Bemis Associates
- Biel Crystal (HK) Manufactory Ltd.
- Blueway Electronic Co. Ltd.*
- BOE
- Boyd Corporation
- BYD Electronic (International) Company Limited
- Catcher Technology
- CCL Industries Incorporated*
- The Chemours Company*
- Cheng Loong Corporation*
- Compal Electronics
- Compeq
- Cooler Master Co., Ltd.*
- Corning Incorporated
- COSMO
- Cowell Optic Electronics Ltd.
- CymMetrik*
- Daesang
- Dixel Corporation
- DSM Engineering Materials
- ECCO Leather
- Everlight Electronics Co., Ltd.*
- Fastway Creation
- Flex Ltd.
- Future Hi Tech Company Limited*
- General Interface Solution Ltd.*
- Goertek
- Goertek Microelectronics*
- Golden Arrow Printing Technology Co., LTD
- H.B. Fuller
- Hama Naka Shoukin Industry Company Limited*
- Henkel
- Hi-P International Limited*
- Hon Hai Precision Industry
- Huizhou Desay Battery Co., Ltd.*
- Hutchinson Technology, Inc.
- ITM Semiconductor Co., Ltd.*
- Jabil
- Jiangyin Kangrui Molding Technology Co., Ltd.*
- Jones Tech. Plc.*
- Keiwa Incorporated
- Kersen Science & Technology
- Kunshan KIMD Co., Ltd.
- LEALEA Enterprise Co., Ltd.
- Lens Technology
- Lingyi iTech
- Lishen
- Luen Fung Group
- Luxshare-ICT
- Marian Inc.*
- Mingxun*
- Murata Manufacturing Co., Ltd.*
- MYS Group Co., Ltd.*
- Nidec
- Ningbo Magsound Industry Co., Ltd.
- Nitto Denko Corporation
- Nordic Semiconductor ASA*
- Pai Shing International Limited*
- Pegatron
- Phone In Mag-Electronics
- Primax Group
- Qorvo
- Quadrant
- Quanta Computer
- RRD
- RyPax Wing Fat Inc.
- SAES Getters S.p.A.*
- SDK
- Seiko Advance Ltd.
- Seoul Semiconductor*
- Shenghe Resource
- Shenzhen Fortuna Technology Company Limited*
- Shenzhen Sunway Communication Co., Ltd.
- Simplo Technology Company Limited*
- SK hynix
- Solvay
- Sony Semiconductor Solutions
- STMicroelectronics
- Stora Enso Oyj*
- Sunwoda Electronic
- Suzhou Anjie Technology
- Suzhou Hengmingda Electronic Technology Co., Ltd.*
- Taiyo Holdings Co., Ltd.
- tesa SE
- Tianma Micro-Electronics (Hong Kong) Ltd.*
- Tong Tai Ying Technology Co., Ltd.*
- Trinseo S.A.*
- Trio Metal Co., Ltd.*
- TSMC
- Tsujiden Co., Ltd.*
- Unisteel*
- VARTA Microbattery GmbH*
- Wistron
- Ying Shing Enterprises Limited*
- Yuto
- Zhuhai CosMX Battery Co., Ltd.*

*Suppliers that have committed to 100 percent renewable energy since publication of the last Program Update in July 2020.

“The Supplier Clean Energy Program is at the center of Apple’s commitment to making world-class products with greener manufacturing. Our suppliers are taking significant actions to join us in this work, and we look forward to seeing more bold pledges as we continue to address our environmental impact.”

— Jeff Williams, Apple’s Chief Operating Officer

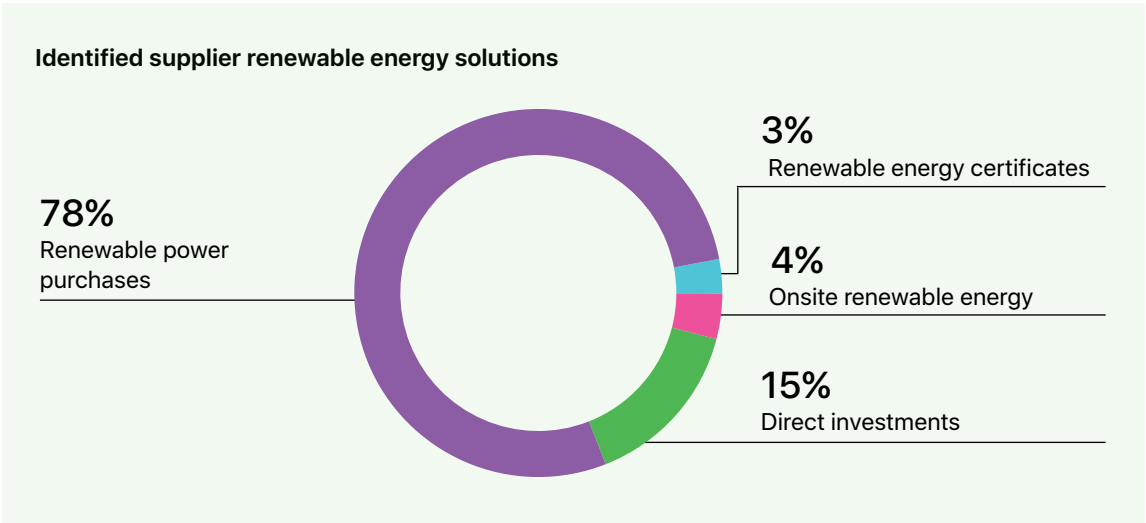
Apple’s Clean Energy Standards

We help our suppliers select projects with the greatest potential for impact and with a clear carbon, ecological, and social benefit. In most cases, wind and solar solutions meet our criteria. For some energy solutions, such as biomass and hydroelectric generation, we review individual projects to ensure that it delivers positive impact while minimizing harm. We also uphold stringent accountability standards to ensure that all clean energy can be verified.

We want to be a driving force for new projects and help overcome barriers to bring new renewable energy online. With the rapidly changing policy dynamics in some of our key countries, we continuously evolve our framework both to comply with local laws and regulations and to yield the most positive and meaningful energy transformation.

Supplier Projects

Clean energy solutions often take time to build, and each of the suppliers listed below is making progress toward meeting their commitment to 100 percent renewable energy for all Apple production. The majority of suppliers find solutions in the same province, state, or grid region in which they operate.



Apple and its suppliers are implementing clean energy solutions using a variety of contracting mechanisms—with renewable power purchases and direct project investments representing 78 and 15 percent, respectively, of all solutions identified or implemented to date.

Supplier-identified renewable energy solutions

Supplier	Onsite Renewable Projects	Offsite Renewable Projects					Markets
		Power Purchases	Direct Investments	China Clean Energy Fund	Utility	Certificates	
II-VI Incorporated						✓	USA
3M							China mainland, Germany, Japan, Singapore, USA
Advanced International Multitech							China mainland
AKM Meadville Electronics							China mainland
Alpha and Omega Semiconductor Limited		TBD					China mainland, USA
Amphenol							China mainland
Arkema						✓	China mainland, France, USA
ASE Technology Holding		TBD					China mainland, Taiwan
Asia Vital Components Company Limited						TBD	China mainland
ATL				✓			China mainland
AT&S		TBD					China mainland
Auras Technology Co., Ltd.		TBD					China mainland
Avary Holding							China mainland
Bemis Associates						✓	USA
Biel Crystal (HK) Manufactory Ltd.							China mainland, Vietnam
Blueway Electronic Co. Ltd.		TBD					China mainland
BOE							China mainland
Boyd Corporation		TBD					China mainland, Thailand
BYD Electronic (International) Company Limited		TBD					China mainland
Catcher Technology				✓			China mainland
CCL Industries Incorporated		TBD					China mainland, India, Mexico, United Kingdom
The Chemours Company		TBD					USA, Netherlands
Cheng Loong Corporation		TBD					China mainland
Compal Electronics				✓			China mainland
Compeq							China mainland, Taiwan
Cooler Master Co., Ltd.		TBD					China mainland

Supplier	Onsite Renewable Projects	Offsite Renewable Projects					Markets
		Power Purchases	Direct Investments	China Clean Energy Fund	Utility	Certificates	
Corning Incorporated				✓			China mainland, South Korea, Taiwan, USA
COSMO							China mainland
Cowell Optic Electronics Ltd.							China mainland
CymMetrik		TBD					China mainland
Daesang							South Korea
Dexerials Corporation						✓	Japan
DSM Engineering Materials						✓	China mainland, Netherlands, Taiwan
ECCO Leather						✓	China mainland, Netherlands
Everlight Electronics Co., Ltd.		TBD					China mainland
Fastway Creation						✓	China mainland
Flex Ltd.							China, India, USA
Future Hi Tech Company Limited		TBD					China mainland
General Interface Solution Ltd.		TBD					China mainland
Goertek							China mainland, Vietnam
Goertek Microelectronics		TBD					China mainland
Golden Arrow Printing Technology Co., LTD				✓			China mainland
H.B. Fuller						✓	China mainland, Germany, USA
Hama Naka Shoukin Industry Company Limited		TBD					China mainland
Henkel							China mainland, Puerto Rico, USA
Hi-P International Limited		TBD					China mainland
Hon Hai Precision Industry							Brazil, China mainland, India, USA
Huizhou Desay Battery Co.,Ltd.							China mainland
Hutchinson Technology, Inc.		TBD					USA
ITM Semiconductor Co., Ltd.		TBD					South Korea, Vietnam
Jabil				✓			China mainland, Taiwan
Jiangyin Kangrui Molding Technology Co., Ltd.		TBD					China mainland

Supplier	Onsite Renewable Projects	Offsite Renewable Projects					Markets
		Power Purchases	Direct Investments	China Clean Energy Fund	Utility	Certificates	
Jones Tech. Plc.		TBD					China mainland
Keiwa Incorporated							Japan
Kersen Science & Technology							China mainland
Kunshan KIMD Co., Ltd		TBD					China mainland
LEALEA Enterprise Co., Ltd		TBD					Taiwan
Lens Technology							China mainland, Vietnam
Lingyi iTech			 				China mainland, India, Brazil
Lishen							China mainland
Luen Fung Group							China mainland
Luxshare-ICT				✓			China mainland, Vietnam
Marian Inc.							China mainland
Mingxun							China mainland
Murata Manufacturing Co., Ltd.						✓	China mainland, Japan, Malaysia, Singapore, Thailand, Vietnam
MYS Group Co., Ltd.		TBD					China mainland, Vietnam
Nidec							China mainland, Philippines, Vietnam
Ningbo Magsound Industry Co., Ltd.							China mainland
Nitto Denko Corporation		TBD					China mainland, Japan, South Korea
Nordic Semiconductor ASA*						✓	Norway
Pai Shing International Limited		TBD					China mainland
Pegatron				✓			China mainland
Phone In Mag-Electronics							China mainland
Primax Group							China mainland
Qorvo						✓	China mainland, Costa Rica, USA
Quadrant							China mainland
Quanta Computer			✓				China mainland
RRD		  					China mainland
RyPax Wing Fat Inc.							China mainland

Supplier	Onsite Renewable Projects	Offsite Renewable Projects					Markets
		Power Purchases	Direct Investments	China Clean Energy Fund	Utility	Certificates	
SAES Getters S.p.A.		TBD					Italy
SDK							China mainland
Seiko Advance Ltd.						✓	China mainland, Japan
Seoul Semiconductor		TBD					South Korea, Vietnam
Shenghe Resource		TBD					China mainland
Shenzhen Fortunta Technology Company Limited		TBD					China mainland
Shenzhen Sunway Communication Co.,Ltd				✓			China mainland
Simplo Technology Company Limited		TBD					China mainland
SK hynix		TBD					China mainland, South Korea
Solvay				✓		✓	Belgium, China mainland, France, Germany, Italy, USA
Sony Semiconductor Solutions						✓	Japan
STMicroelectronics						✓	China, France, Italy, Malaysia, Malta, Morocco, Philippines, Singapore
Stora Enso Oyj		TBD					China mainland
Sunwoda Electronic							China mainland, India
Suzhou Anjie Technology							China mainland
Suzhou Hengmingda Electronic Technology Co., Ltd.							China mainland
Taiyo Holdings Co., Ltd.		TBD					Japan
tesa SE						✓	China mainland, Germany
Tianma Micro-Electronics (Hong Kong) Ltd.		TBD					China mainland
Tong Tai Ying Technology Co., Ltd.		TBD					China mainland
Trinseo S.A.		TBD					Taiwan
Trio Metal Co., Ltd.		TBD					China mainland
TSMC						✓	China mainland, Taiwan
Tsujiden Co., Ltd.		TBD					Japan

Supplier	Onsite Renewable Projects	Offsite Renewable Projects					Markets
		Power Purchases	Direct Investments	China Clean Energy Fund	Utility	Certificates	
Unisteel		TBD					China mainland
VARTA Microbattery GmbH		TBD					Germany
Wistron				✓			China mainland, India
Ying Shing Enterprises Limited		TBD					China mainland
Yuto							China mainland, India, Vietnam
Zhuhai CosMX Battery Co., Ltd.		TBD					China mainland

*Because supplier does not have internal manufacturing sites related to Apple spend, we have provided the locations of their headquarters.

Legend	 Solar energy	 Wind energy	 Biomass	 Geothermal
---------------	--	---	--	--

Notes:

- Solutions are either online, in process, or planned.
- TBD reflects solutions not yet finalized.
- Biomass is sourced from China's largest biomass plant, located in Guangdong Province. The project has undergone rigorous evaluation to make sure it meets Apple's high standards for ensuring sustainable and socially responsible power sourcing from biomass. The biomass plant generates electricity from biological waste (such as eucalyptus bark, sugarcane stalks, and rubber tree waste) that would otherwise be incinerated.
- Solutions listed reflect part of supplier's global portfolio. In the case of suppliers operating in multiple geographies, listed solutions may be implemented in one market and not in others.

Appendix

INDEPENDENT ASSURANCE STATEMENT



To: The Stakeholders of Apple, Inc.

Introduction and objectives of work

Apex Companies, LLC (Apex) was engaged by Apple, Inc. (Apple) to conduct an independent assurance of its Supplier Clean Energy Program data reported in its 2020 environmental report (the Report). This assurance statement applies to the related information included within the scope of work described below. The intended users of the assurance statement are the stakeholders of Apple. The overall aim of this process is to provide assurance to Apple's stakeholders on the accuracy, reliability and objectivity of select information included in the Report.

This information and its presentation in the Report are the sole responsibility of the management of Apple. Apex was not involved in the collection of the information or the drafting of the Report.

Scope of Work

Apple requested Apex to include in its independent review the following:

- Methodology for tracking and verifying supplier clean energy contributions, including the Energy Survey, Renewable Energy Agreement, and other forms of supporting documentation provided by suppliers where available;
- Assurance of Clean Energy Program data and information for the fiscal year 2020 reporting period (September 29, 2019 through September 26, 2020), specifically, in accordance with Apple's definitions:
 - Energy: Reported megawatt-hours (MWh) of clean energy attributed to the Clean Energy Program for suppliers;
 - Avoided Greenhouse Gas (GHG) emissions associated with clean energy attributed to the Clean Energy Program;
 - Operational Capacity in megawatts (MWac) of clean energy in support of Apple manufacturing as a part of Apple's Supplier Clean Energy Program;
 - Appropriateness and robustness of underlying reporting systems and processes, used to collect, analyze, and review the information reported;

Excluded from the scope of our work is any assurance of information relating to:

- Text or other written statements associated with the Report
- Activities outside the defined assurance period

Assessment Standards

Our work was conducted against Apex's standard procedures and guidelines for external Verification of Sustainability Reports, based on current best practice in independent assurance. Apex procedures are based on principles and methods described in the International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board.

Methodology

Apex undertook the following activities:

1. Remote virtual visit to Apple corporate offices in Cupertino, California;
2. Interviews with relevant personnel of Apple;
3. Review of internal and external documentary evidence produced by Apple;
4. Audit of reported data, including a detailed review of a sample of data against source data; and
5. Review of Apple information systems for collection, aggregation, analysis and internal verification and review of environmental data.

The work was planned and carried out to provide reasonable assurance for all indicators and we believe it provides an appropriate basis for our conclusions.

Our Findings

Apex verified the following indicators for Apple's Fiscal Year 2020 reporting period (September 29, 2019 through September 26, 2020):

Parameter	Quantity	Units	Boundary/ Protocol
Clean Energy Use	11.4	Million megawatt hours (mMWh)	Apple suppliers / Apple Internal Protocol
Avoided GHG Emissions	8.6	Million metric tons of carbon dioxide equivalent (mMtCO ₂ e)	Apple suppliers / Apple Internal Protocol
Operational Capacity	4,531	Megawatts (MWac)	Apple suppliers / Apple Internal Protocol

Our Conclusion

Based on the assurance process and procedures conducted, we conclude that:

- The Clean Energy Use, Avoided GHG Emissions, and Operational Capacity assertions shown above are materially correct and are a fair representation of the data and information; and
- Apple has established appropriate systems for the collection, aggregation and analysis of relevant environmental information, and has implemented underlying internal assurance practices that provide a reasonable degree of confidence that such information is complete and accurate.

Statement of independence, integrity and competence

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest.

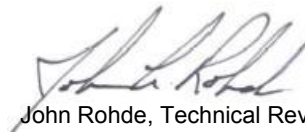
No member of the assurance team has a business relationship with Apple, its Directors or Managers beyond that required of this assignment. We have conducted this verification independently, and there has been no conflict of interest.

The assurance team has extensive experience in conducting verification and assurance over environmental, social, ethical and health and safety information, systems and processes, has over 30 years combined experience in this field and an excellent understanding of Apex standard methodology for the Assurance of Sustainability Reports.

Attestation:



Trevor A. Donaghu, Lead Assuror
Program Manager
Sustainability and Climate Change Services



John Rohde, Technical Reviewer
Practice Lead
Sustainability and Climate Change Services

March 17, 2021